# ABSTRACT

A STRUCTURE FOR CONSCIOUS THOUGHT:

THE ARTIFICIAL INTELLIGENCE PERSPECTIVE

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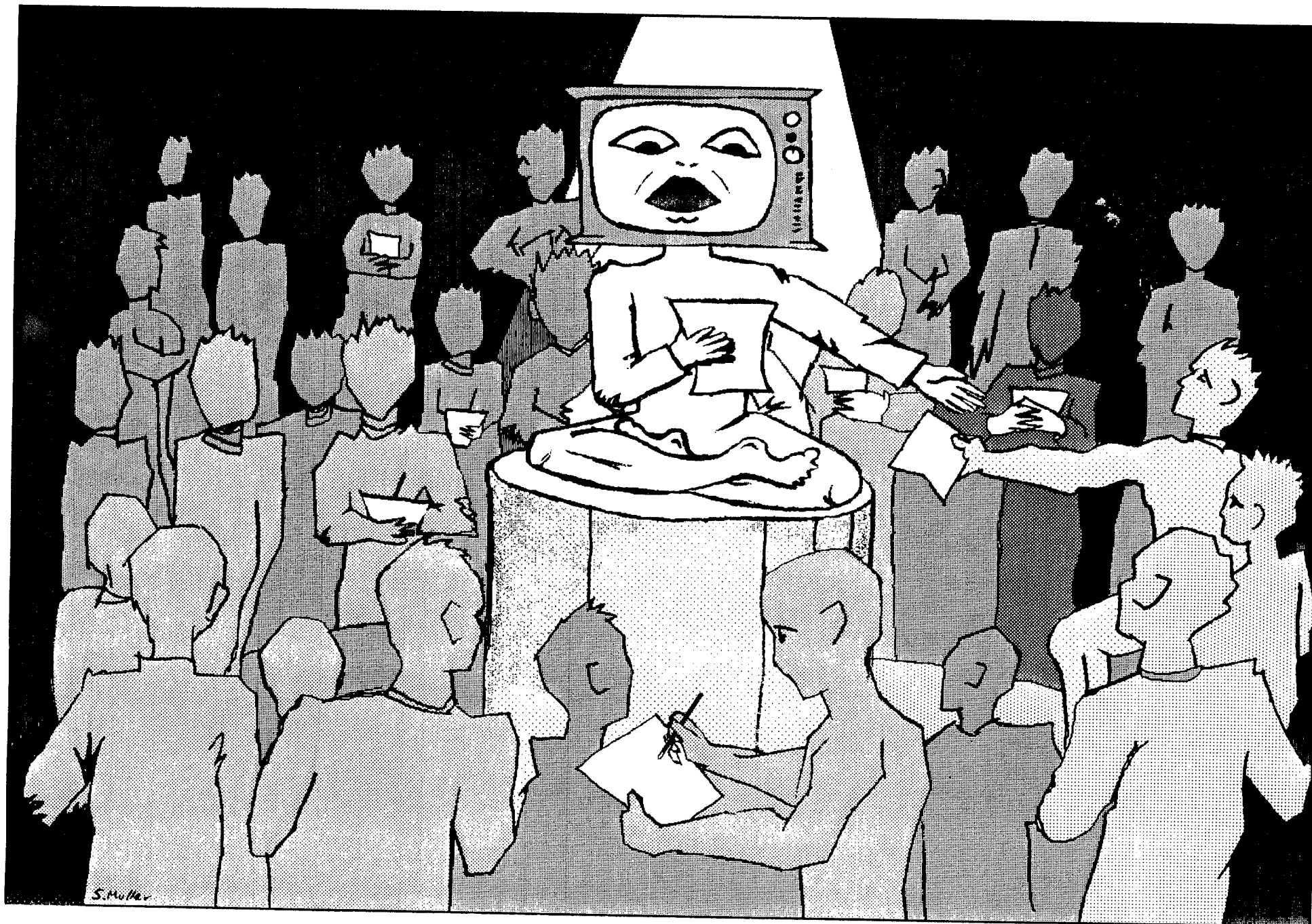
THE VOICE IN YOUR HEAD IS NOT THE SOURCE OF YOUR IDEAS

The analyst-mutes, who compose the audience, use the Spokesman to communicate their individual ideas and reactions out to their fellow audience members. Like a TV news anchorman, the Spokesman merely broadcasts the ideas of others.

ABSTRACT

The Artificial Intelligence approach to examining consciousness is the same functionalist approach used throughout the computer sciences - divide the phenomenon to be studied into distinct functional subunits and trace the communication between them. We attempt a first cut at this type of analysis.

Another basic tenet of explanation is that a property to be explained should be built up from elements that do not themselves exhibit that property (Hofstadter, 1985). We will propose that just as the property green can arise from a collection of colorless molecules, the phenomenon of consciousness may arise from the interaction of non-conscious functional units.

In what follows, we describe three case studies, each of which illuminates some aspect of consciousness. The first of these, reading to ourselves, is an everyday experience. The other two, functioning at an expert level during competition, and being caught in an infinite loop, are less commonplace and yield more privileged insights. We then attempt to synthesize what we have learned, by proposing a particular structure for consciousness that exhibits the required properties. In particular, we derive a structure that accounts for the peculiar process whereby it is possible for you to hear yourself think.
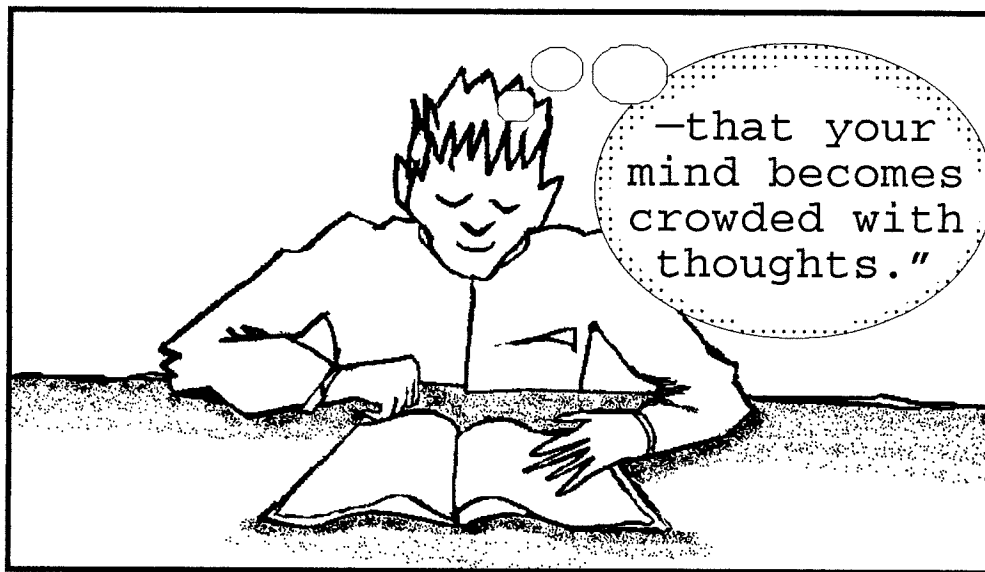
The example of reading to ourselves focuses attention on the voice in each of our heads, and brings out the point that on certain occasions our minds can become crowded with more thoughts than we can handle. The experience with peak performance during mathematics competitions

provides an extended example of the contrasts between various modes of mental functioning, and illustrates the "public" nature of conscious mental thought. Finally, the incident in the sensory-deprivation tank, becoming caught in an infinite loop, gives a rare glimpse into the pathologies that our mind is susceptible to, and constrains us to propose models that exhibit the structural features necessary to support such pathological functioning.
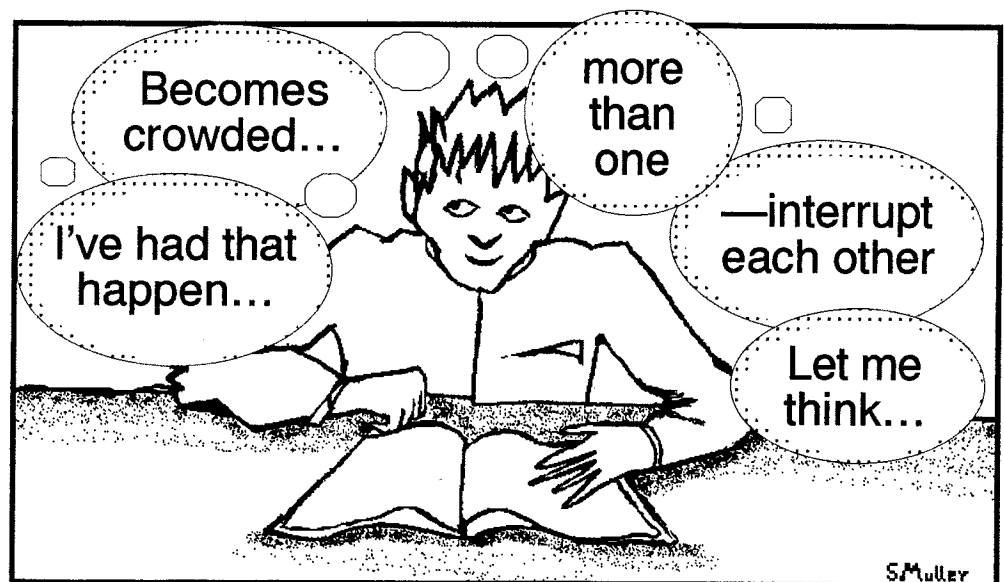
Our discussion suggests that our mental life is populated by numerous analysts, or "analyst-mutes," all of whom are exposed to the contents of our consciousness, and who at times comment on it. When we are engaged in conscious thought, however, the contents of our consciousness are simply the prior comments made by individual analytic-mutes. Each remark, rather than being voiced by the analytic-mute itself, is voiced by a single, shared spokesman - the voice in our heads - and thus becomes an object for further comment by the other analytic-mutes and even by the original analytic-mute itself. Even though the answers to a number of questions are still ahead, with the development of this model we take an important step down the road toward resolving the paradoxes of our conscious mental life, and toward illuminating what it is that is going on when you hear your "Self" think.

"Some ideas trigger so many reactions—
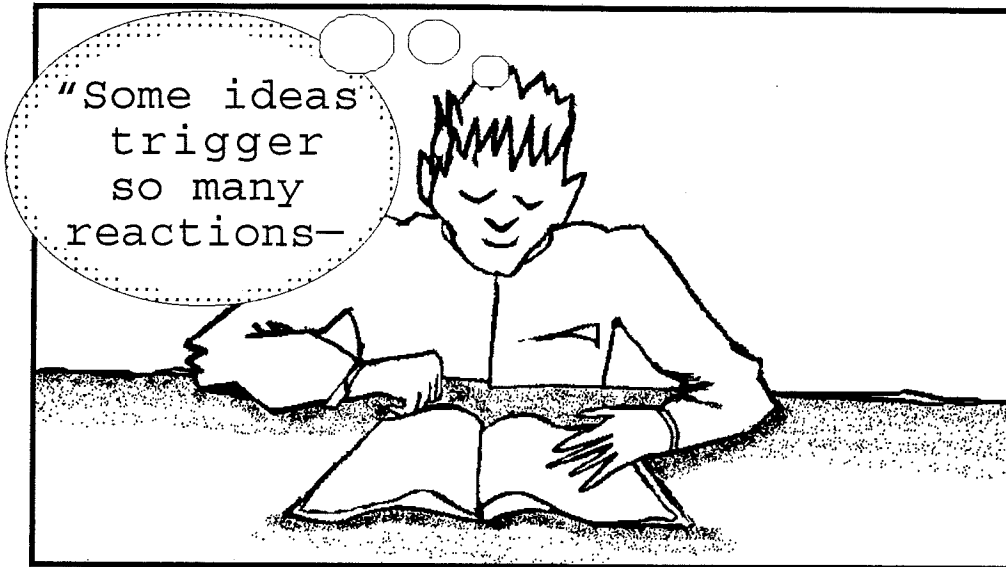
The process of reading to ourselves can bring the "voice–in–our–heads" under experimental observation.

—that your mind becomes crowded with thoughts."

Here we see "the voice" overwhelmed by thoughts, demonstrating its finite capacity.

Becomes crowded…

more than one
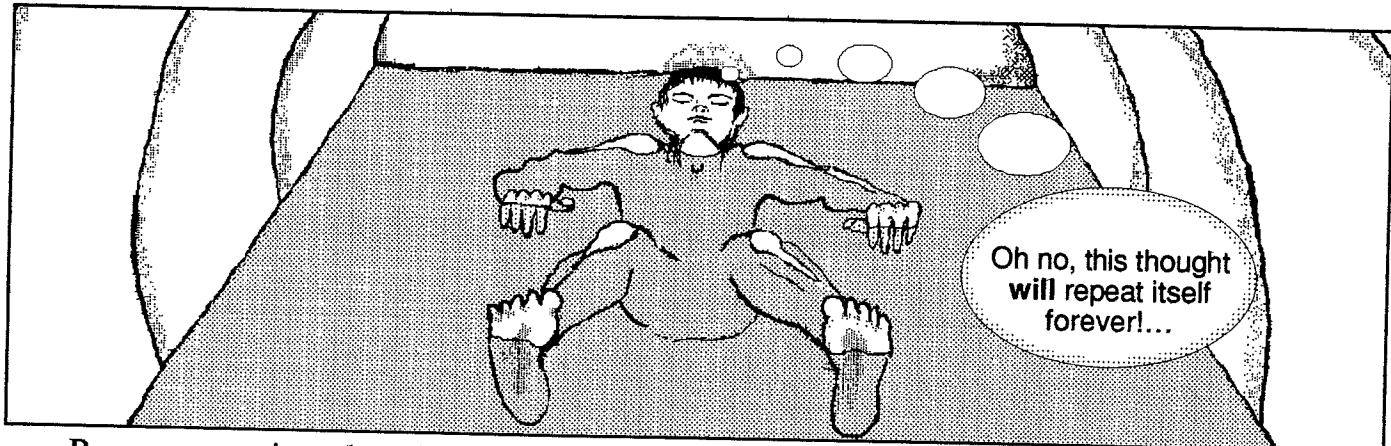
I've had that happen…

—interrupt each other
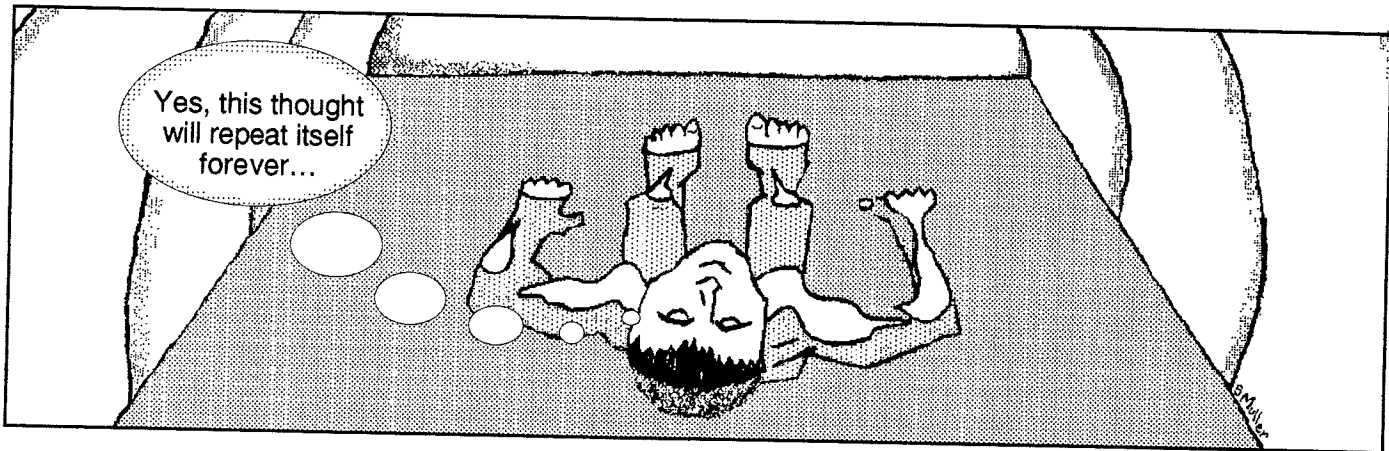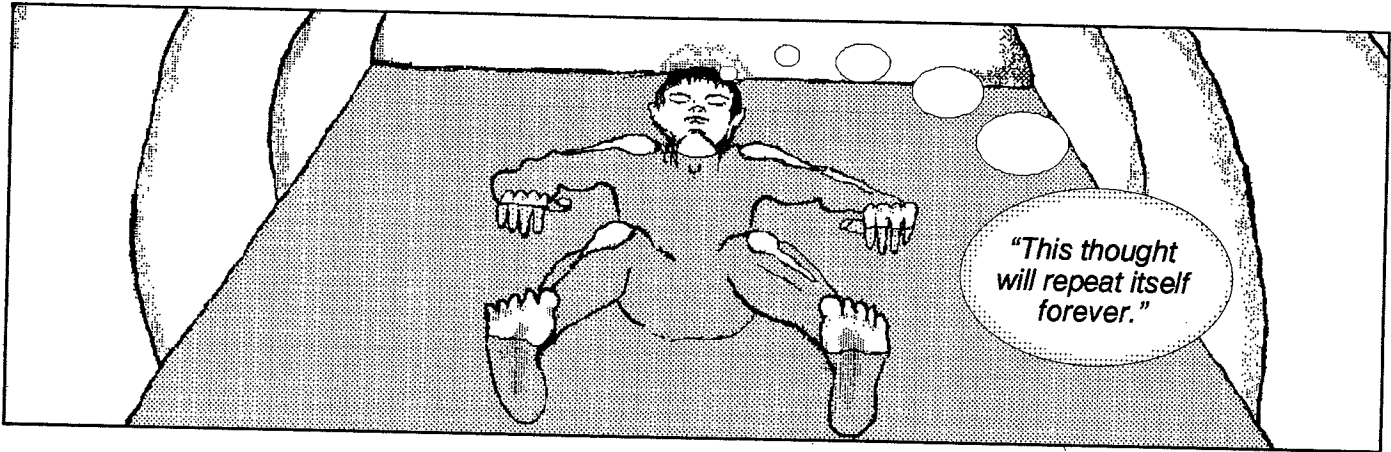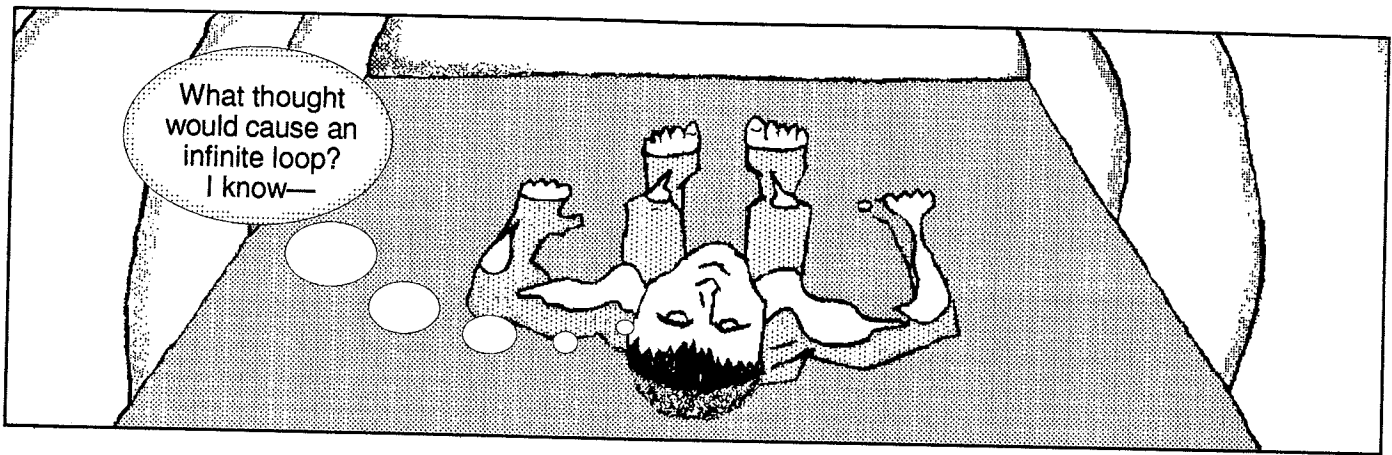
Let me think…

S.Muller

THE MATH TEST SCENARIOS

THE PERILOUS AUTO-RESPONSE
Steps taken **outside of consciousness**
cannot be checked.
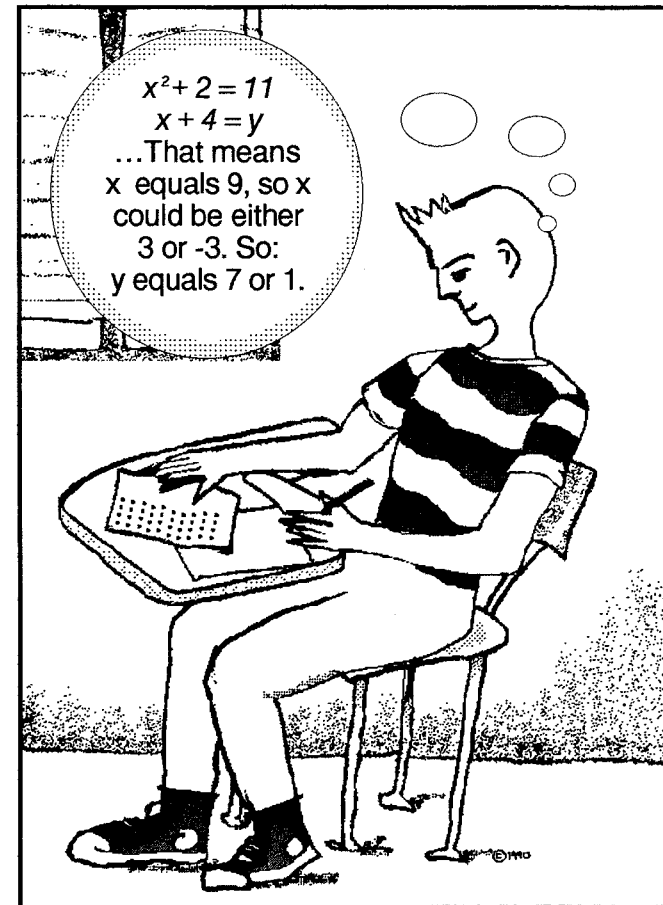
THE MORE RELIABLE STEP-BY-STEP
Carrying out the steps **consciously** opens them
to scrutiny.

Because conscious thoughts become objects of further analysis, infinite loops are possible.